

Indicators for a European Cross-country State-of-the-Art Assessment of Non-timber Forest Products and Services

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Abstract This paper reviews selected quantitative indicators designed to help in the comparison and classification of non-timber forest products and services in Europe. These indicators have been based on fragmentary data available through COST Action E30 (phase one) country reports. Two preliminary sets of indicators are suggested, which are applied to four selected countries from a larger survey as examples. A general description of the objectives and the theoretical background for the cross-country comparison is presented, and their usefulness and limitations are examined in these examples. The market potential of NTFP&S is unequally developed within and distributed throughout the countries that have been included in this sample survey. In this first attempt to sort out the importance NTFP&S have within the national economies of these selected countries, it became obvious that national and regional imbalances are major limitations for comparison. However, NTFP&S are relevant, according to particular regions and the social strata of the society that deal with them, predominantly for rural livelihoods.

Keywords Economic potential of NTFP&S · Small-scale forest enterprises · Cross-country comparison

Introduction

European traditions of forest management have led to distinct regional features in the use and management of renewable natural resources. The various regional and

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national cultures in Europe have developed principles of forest management so unique in history that it is interesting to trace their development to their present day. In pre-modern eras, the European principles of private and state forest management were designed predominantly to secure a sustainable yield from the forests for their owners and to exercise paramount power over small forest users, mostly rural poor with an agrarian background and smallholders with little or no legal access to forests. Their diverse management practices in a self-sufficient rural setting tended to compete with activities in the agrarian sector as far as labour inputs are concerned (Corvol 1987; Rackham 2006).

The harvesting of forest products other than timber—be it the gathering of so-called minor forest products or hunting—is historically relevant for the local small-scale economies of subsistent farming communities. In everyday life, communities were either dependent on—or had to supplement their livelihood by—food and medical plants that were procured either legally or—as was more often the case—illegally from the forests. The development of national forest laws in Europe, particularly in the 18th and 19th centuries, gave testimony of this and rigorous policing tried to put an end to the deliberate and almost customary illegal use of non-timber forest products (NTFP) (e.g. Landolt 1866; Corvol 1987; Allmann 1989). Forests and their products were often perceived, as it is nowadays the case in many low-income developing countries, as an open access resource for everybody. The rise of democratic political movements throughout Europe, mostly in the 19th century, has brought about changes in the right of access to forests, which has been granted to the general public. Hunting and gathering practices have been liberalized and become pastimes in modern civil society. There have been, however, different developments in the more agrarian and feudal societies and those countries which have been shaped by industrialism with a tremendous demand for wood production.

A rapid orientation developed towards more emphasis on the recreational and landscape value of forests, at least in Western Europe, after World War II. The small-scale economic benefits provided by forests to the rural population or small enterprises declined in importance in these countries, but remained important sectors in the countries east of the Iron Curtain. In the process of European countries coming politically closer to each other by joining the European Union, a newly emerging forest policy that focuses on the similarities and diversity of forest use and management in Europe has to take this situation into account, but also allow scientific interest and the political intention to guide other countries' legacies to develop. The use of NTFP, and moreover the public access to them, is a matter of authentic people's participation in the use of forest resources in general, from which major sections of society have been disconnected, mostly by restrictive forest laws. NTFP use may therefore be taken as a process of rediscovering what has been part and parcel of a locally-based agrarian lifestyle that was naturally supplemented by consumable forest products. Nowadays, urban consumers have largely replaced the former type of subsistence NTFP user in Europe, except perhaps for users in remote and poor areas. However, the inclusion into a modern consumer society and the preservation of the cultural meaning of the forests is essential for the societal estimation of the quality of NTFP&S in an encompassing sense to be appreciated

and used with regard to sustainable forestry, including amenities and aesthetics (Oliver et al. 2001; Dudley et al. 2006).

All information on NTFP&S used in the four examples below have been drawn from the respective country reports submitted to the management committee of COST Action E30, which issued guidelines for data collection at the beginning of the Action. Preparing country reports on the salient features of the COST Action (Jäger 2005) are one of the major tasks to ensure cross-country comparison and enable a policy discussion based on knowing the state-of-the-art in all member countries. The study task was to produce an overview of selected qualitative indicators through use of the fragmentary data available in these country reports (Seeland and Staniszewski 2005). For the sake of comparison and mutual learning, it was decided by the members of a specially established sub-working group to identify indicators of non-timber forest products and services (NTFP&S) to assess their varying economic importance in a historical perspective and for the future. The economic experiences that may benefit other regions, and support sustainable development in these regions, were important reasons to look at these phenomena in a comparative way. Indicators are essential for structuring the value differences for NTFP in on-farm consumption and in identifying the respective domestic markets and export potential. The scientific objective of this cross-country survey was to make the specific importance and role of non-timber forest products and services comparable among European countries of different economic structure, environmental and forest legislation, and history.

According to OECD (1993, p. 5), indicators:

- reduce the number of measurements and parameters which normally would be required to give an ‘exact’ presentation of a situation. As a consequence, the size of a set of indicators and the amount of detailed information included in them, need to be limited. A set with a large number of indicators will tend to clutter the overview. Too few indicators, on the other hand, may be insufficient to provide the necessary relevant information. In addition, methodological problems related to weighting tend to become greater with an increasing level of aggregation;
- simplify the communication process by which the information of results of measurement is provided to the user. Due to this simplification and adaptation to user needs, indicators may not always meet strict scientific demands to demonstrate causal chains. Indicators should therefore be regarded as expression of ‘the best knowledge available’.

The Case Study Countries and Data Sources

The economic potential of NTFP still varies greatly among regions between and even within countries such as Austria in central Europe, Finland in the north, Italy in the south, and particularly in the rural areas of the former communist mid- and south-eastern countries such as Romania. To cover a broad scope of geographical variation inside Europe and having a similar base of information on NTFP, the four

aforementioned countries have been selected to be compared in this paper, from the comprehensive list, covering all countries which participated in COST Action E 30 (as reported by Seeland and Staniszewski 2005). This selection was made on the basis of availability of data, the importance of NTFP for the country and the geographical distribution that covers the centre, north, east and south of Europe.

The tables are structured irrespective of what could be expected to be found in the respective country reports. The guiding principle was primarily the comparability of the conditions in the forestry sector reported by the member countries in this COST Action. It was assumed that by using this deductive method, a more objective picture will emerge of the situation based on data provided by the countries' representatives to the management committee of the Action who are responsible for their country report. The reason for this assumption was that during the Action an effort was made to reach a consensus based on guidelines for the preparations of the country reports, to compile and aggregate data at a comparable country level. It was agreed that highly country-specific situations, for instance, would not be interpreted and thus would be excluded for the sake of comparability.

A more in-depth investigation and compilation of primary data would have had to go beyond the information available in the country reports, which was not intended and beyond the sub-groups' working capacity. Notably, as well as the frequent lack of data at the national level, there was often found to be a considerable range of NTFP&S at the regional and quite often at the local level which also could not be recorded. The items and indicators were classified according to their frequency of mentions in the country reports (the sources are reported in Table 1), but quantification of harvest was not attempted, because of the lack of accurate data stated in the country reports and for the sake of comparability between the countries. In some countries, there are no data on NTFP at all. Where data are available, one has to be cautious about their reliability, because the actual use figures of NTFP do not always find their way into official records.

The First Set of Indicators

The indicators were developed by a two-stage approach. Because no earlier attempts to define indicators for a cross-country comparison were known to the members of COST Action E30, the *first set* of indicators was selected according to the assumption that they are applicable and relevant in each of the countries surveyed. Five indicators were chosen in order to make NTFP&S comparable in a cross-country perspective:

1. *Significance*: provides an overall assessment of whether this NTFP or NTFS is important in the general national context of forest use.
2. *Monetary benefit*: denotes whether there is a substantial cash flow associated with the goods or services provided.
3. *Disputed*: indicates whether goods or services are disputed among particular stakeholders or whether they are contested domains in public discourse in a country in general.

Table 1 Selected compilation of publications related to NTFP&S in the COST Action E30 country reports for Austria, Finland, Italy and Romania

Country	Data sources
Austria	UNECE/FAO 2004, 'Forest Legislation in Europe: How 23 Countries approach the obligation to reforest, public access and use of Non-Wood forest products'. Geneva Timber and Forest Discussion Paper 37 (by Bauer, J., Kniivilä, M., Schmithüsen, F.), Geneva.
Finland	Kangas, K., 2001. Commercial wild berry picking as a source of income in northern and eastern Finland. <i>Journal of Forest Economics</i> 7(1): 35–68. Saarinen, J., 2003. The regional economics of tourism in Northern Finland: the socio-economic implications of recent tourism development and future possibilities for regional development. <i>Scandinavian Journal of Hospitality and Tourism</i> 3(2): 91–113. Saastamoinen, O., 1982. Economics of the multiple-use forestry in the Saariselkä fell area. Communications Instituti Forestalis Fenniae 104, Helsinki.
Italy	Breisch, H., 1993. Harvest, storage and processing of chestnuts in France and Italy. In: Antognozzi, E. (ed.) International congress on chestnut. Spoleto, Italy, pp. 429–436. FAO. 1995. Edible nuts. Non-wood forest products for rural income and sustainable forestry. N.5, UN Food and Agriculture Organisation, Rome. FAO. 2001. Non-wood forest products from broadleaf forests. FAO NWFP Series, Rome. Petenella, D., 2001. Marketing Perspectives and Instruments for Chestnut Products and Services. <i>Forest Snow and Landscape Research</i> 76 (3), pp. 511–517.
Romania	Blujdea, V. and Dragoi, S., 2000. General overview on the forest products and services in Romania. Proceedings of the Seminar on Valuation of Forest Goods and Services, Opcno, Czech Republic, 19–21 Nov. Dragoi, S., 2003. Socio-economic analysis of the supply and demand on forest products. Forest Research and Management Planning Institute, Bucharest. Internal report, 110 p., unpublished. Dragoi, S. and Parnuta, G., 2000. Statement on non-wood forest products in Romania. Proceedings of the International Workshop on Sustainable Development of NWFP in Countries in Transition to the Market Economy. Chisinau, 23–27 Oct.

Source: Jäger (2005)

4. *Job relevance*: indicates whether the goods or services make up a substantial part of employment in the rural sector.
5. *Access for private or public use*: indicates whether there are regulations for the collection of NTFP or property rights over them in the respective country.

In Austria, the public can legally collect berries, fruits and mushrooms that have considerable monetary value. The traditional NTFP are, however, not considered of major importance at the national level by the authors of the Austrian country report nor are they held important in providing employment. More relevant at the national level are hunting, tourism and recreation, education and nature conservation. All of these activities are relevant for creating jobs and make recognizable financial contributions but are, except for nature education, causes of conflict as well. A similar picture arises in the use of NTFP&S in Finland, although the gathering of berries, fruits and mushrooms are of nationwide importance. As far as the non-timber services are concerned, they are as important as in Austria, but none of them is disputed in public discourse.

The situation in Romania is highly similar to that in Finland and Austria, but medicinal plants and honey collection and processing complement the range of important NTFP. Nature education and conservation seem to be in their initial stages only and the importance of the latter has been acknowledged at the national level. No NTFP&S are under dispute except for tourism and recreation, which can be assumed to have the largest potential for job and income creation. In Italy, mushroom gathering and the harvesting of nuts and pine seeds are of national importance, but the collection of berries is unimportant. Bark and cork are relevant commodities for employment and income in Italy, as are hunting, tourism, nature education and conservation. All are important and uncontested sectors at the national level.

The Second Set of Indicators

The classification according to a *second set* of indicators started with extracting from the COST Action E30 country reports by the authors and listing products which are traditionally collected, followed by a list of services which are rendered by forest enterprises or individuals to society. Traditional products were examined in detail to determine whether their importance is increasing, decreasing or remaining constant over time. New products or those that are perceived as ‘stylish’ in the sense of relating to a modern lifestyle, such as herbs for health or herbal cosmetics, were called *trend products*. Other indicators, such as whether a particular product is a popular major product as far as quantity is concerned, or a *rare and highly valued product* (e.g. truffles), and whether it is relevant for the export sector, were defined. Services were treated separately as were questions of access. Legal considerations including ownership rights and customary law were taken into account, as were disputes and conflicts over entitlements to benefit from NTFP&S. The main current problems with NTFP&S in the countries considered were addressed in an additional section *remarks*.

As reported in Table 2, the importance of the traditional NTFP&S in Austria is decreasing. Hunting remains a constant activity, although the services connected to it have become more relevant and are Austria’s main NTFP. On the other hand, recreation, nature education and nature conservation activities have become trend services of increasing relevance for the forest sector and beyond. As far as Finland’s traditional NTFP (listed in Table 3) are concerned, their importance seems to be stable, although there are no explicit statements about changes or development trends in the country report. Berries and mushrooms are still *core products* for domestic consumption and export. New innovations that have become trend products during the recent decades include natural cosmetics and medical herbs, and new tourism services including snow-mobile trekking and dog sledge safaris, wilderness biking and canoe and kayak tours.

Major changes are taking place in Romania—as summarised in Table 4—because of rapid political and economic transition. Traditional products and services remain the main products; gathering of berries, mushrooms, medicinal and aromatic plants, tree seeds, resin and honey are as important as hunting and fishing.

Table 2 Products which are traditionally collected and services which are rendered by forest enterprises or individuals to the Austrian society

Old / traditional product or service		Mushrooms, berries; +) resin; collection of leaf, litter, foliage and branches (animal fodder); grazing, hunting; water management; recreation
Changes / tendencies	decreasing	Resin; collection of leaf, litter, foliage and branches (animal fodder);*
	constant	see: remarks hunting
	increasing	Recreation, education, nature conservation
Trend product		Forest education; heating energy on the basis of forest biomass; nature conservation
Main product		Besides timber - hunting
Rare and high value product		no data in the Country Report
Export		no data in the Country Report
Services		Protection against natural hazards (mountains), water protection; recreation and forest education, nature conservation
Access		Everyone can collect forest floor resources for personal use if the forest owner not explicitly prohibits this use
Main current problems		Maintenance of protective forests; conflicts between timber production and hunting (game management); sometimes conflicts between timber production and tourism; reg. mushrooms, berries etc. there is everybody's right plus private right at the same time which makes management difficult; many of NTFs activities are often excluded from forest enterprises and transferred to new economic entities (problem of data)
Remarks		*estimation - no efficient data in the country report +) non-market products are included (mushrooms, berries only partly marketed; water management and protection against natural hazards not marketed) general remark: currently services are much more important than NW products (NT: wood chips for energy production of growing importance) (also reg. hunting; the service aspect is more important than the product aspect)

Innovations of increasing importance are the cultivation of Christmas trees and, quite unusually, the breeding of racehorses inside forest areas. Nature parks have been established and forest tourism and outdoor activities have become popular. Further, the role of forests in carbon sequestration is recognized as a new socio-economic service. Italy, being one of the advanced economies in the European Union, still maintains a legacy of traditional forest products, including bark, medical herbs, manna (the sap of *Fraxinus ornus*), pine seeds and leaf fodder. However, these products—as well as chestnuts, hazelnuts, mushrooms (except truffles) and resin—tend to be of decreasing importance nowadays (Table 5). Truffles have become a highly valued and popular core product both for domestic consumption and export. Environmental protection, carbon sequestration and recreation are now the major services rendered by forests.

Access to the forests in the sample countries is either under everyman's right (particularly in Austria and Finland) or is regulated by regional or local authorities (Italy and Romania).

Table 3 Products which are traditionally collected and services which are rendered by forest enterprises or individuals to the Finnish society

Old/traditional product or service	Berries, mushrooms, tarragon, tree sap, Christmas trees, different kinds of decoration substances (lichen, <i>Salix</i> species, moss)
Changes/tendencies	decreasing no data in the Country Report
	constant no data in the Country Report
	increasing Nature tourism (snowmobile trekking, dog sledge safaris, mountain biking, canoeing/kayaking)
Trend product	Innovative products: valuable substances (medical and cosmetic products), nature tourism, "new tourism", especially snowmobile trekking, dog sledge safaris, mountain biking, canoeing/kayaking)
Main product	Berries and mushrooms
Rare and high value product	no data in the Country Report
Export	Berries and mushrooms
Services	Nature based tourism (traditional Nordic cross-country skiing, snowmobile trekking, utilisation of reindeer and game populations, conservation of forest environment, recreational use of forest nature (summer cottages, berry and mushroom picking, hiking, bird watching, hunting)
Access	Everyman's right: hiking, biking, skiing, picking flowers, economically most important berries and mushrooms, ice fishing, angling, boating, swimming - free; not allowed: kill or disturb animals, damage growing trees, collect many herb species and special products (e.g. moss and lichen), make open fires, drive motorised vehicles without the landowner's permission. Fishing (excluding ice fishing and angling) and hunting require special permits. To pick wild mushrooms or herbs for commercial use, the pickers are recommended to have a special certificate. Despite everyman's access right, the landowner's permission is always required for commercial nature tourism.
Main current problems	no data in the Country Report
Remarks	no data in the Country Report

Discussion

Although quantitative data would be useful as a basis for comparisons of economic importance of NTFP&S between countries, they are either not available in all the countries or not aggregated in the same way and hence are not suitable for making comparisons. Further, it is debateable whether collection of these data would warrant the administrative efforts required, because NTFP&S are often not considered to be a highly relevant sector of the economy, or because collecting reliable data would not be possible due to the limited capacities of the respective country's forest administration. In countries where open access to NTFP is guaranteed by law to everybody, irrespective of whether they are harvested in private or public forests, quantitative harvesting records are not made, because they

Table 4 Products which are traditionally collected and services which are rendered by forest enterprises or individuals to the Romanian society

Old / traditional product or service		Berries, edible mushrooms, medicinal and aromatic plants, Christmas trees, forest seeds, woodcrafts, fishing, fish-farms, hunting, game, resin, osier, wicker, bee honey
Changes / tendencies	decreasing	Wicker, osier, pheasant (bird's flue)
	constant	Mushrooms, medicinal and aromatic plants, forest fruits, forest seeds and seedlings, game
	increasing	Forest fruits and berries, hunting, Christmas trees, race horses
Trend product		New national and natural parks have been set up; potted Christmas trees
Main product		Mushrooms, medicinal and aromatic plants, forest fruits, forest seeds and seedlings, hunting and game, pheasants and fish
Rare and high value product		no data in the Country Report
Export		Berries, mushrooms, venison, pheasants
Services		CO ₂ sequestration, silvo-tourism and outdoor activities, communes, communities and private forest management
Access		Public custom: public access to all national forests, collecting berries mushrooms or other biological forest products is obliged to be authorised by the local agency for environmental protection; collector cannot gather biological forest products from private lands without owners' permission
Main current problems		The restitution process of private-owned forest land has had a strong impact on the distribution of income in case of forest fruits and berries
Remarks		the new Forest Code is under public debate and the definitive laws are to be issued; the private-owned forest land is still subject to accurate cadastre measurements and conflict situations and illegal harvesting

would be unacceptably expensive to collect. The same applies to countries where access to NTFP is restricted, although it makes a major difference for the forest owners—but not necessarily to the administrators—whether these products are harvested in private or public forests.

The tables were generated after intense discussions and a further structuring process in a sub-working group of COST Action E30. It was agreed that they should comprise of indicators that cover relevant policy topics such as significance for the forest sector at the national level, whether the product creates income and employment and whether it is disputed in public political discourse in the respective country. Another important dimension was the question of legal access to forests and their NTFP&S for either private or commercial use.

Some potential areas of further research can be identified. A critical review of the examples of Austria, Finland, Romania and Italy reveals that it is almost impossible to take into account regional and local variations concerning the importance of indicators within a country. NTFP&S are relevant, according to particular regions and the social strata of the society that deal with them, predominantly for rural livelihoods of the landowners from the income they generate (hunting fees on private lands, gathering of mushrooms and berries). They are also relevant for urban

Table 5 Products which are traditionally collected and services which are rendered by forest enterprises or individuals to the Italian society

Old/traditional product or service		Bark, medical herbs, manna (sap of <i>Fraxinus ornus</i>), leaves and herbs for fodder
Changes/tendencies	decreasing	Chestnuts, hazelnuts, mushrooms [excl. truffles], bark, resin, medical herbs, leaves and herbs for fodder
	constant	Pine seeds
	increasing	Truffles, cork
Trend product		Truffles
Main product		Chestnuts, hazelnuts, pine nuts, mushrooms (with truffles)
Rare and high value product		Truffles
Export		Truffles
Services		Environmental protection; carbon sequestration; recreation
Access		Under regulation of regions or local authorities
Main current problems		no data in the Country Report
Remarks		no data in the Country Report

citizens in that they provide specific lifestyle products that are in demand (recreation, nature conservation, cosmetics, aromatic and medicinal herbs and truffles, but also hunting as a pastime). The market potential of NTFP&S is unequally developed and distributed throughout the countries that have been included in this sample survey. In this first attempt to sort out the importance NTFP&S have within the national economies of these selected countries, it is the regional imbalances within countries that seem to warrant investigation first. The state of the art of methods for estimation of their relevance for the national economy needs to be assessed by future research to determine whether there is a future potential for their marketing inside and outside national boundaries.

For a comprehensive overview of the European status of NTFP&S, a product- or service-oriented market survey will have to be conducted in order to take the wide and dispersed situation and legal foundation of each country into account. Once single or groups of products and services are investigated, cross-country comparison will be easier to perform and will provide more useful information. Moreover, a survey among entrepreneurs is needed to provide information on who will take the lead in marketing new NTFP&S. Will large, medium or small forest enterprises be attracted, and what size of enterprise will be the most promising innovation agent in the sector? What structural changes in the forest sector are needed to promote non-wood products and services, and what strategies are adequate to achieve value-adding for NTFP&S to compensate for the high wage costs involved? These questions and others can only be answered by comparative in-depth case studies among countries in which products and services have a relatively similar importance and are at a comparable economic stage of development.

In that little empirical research has been conducted on rural supply and urban demand of NTFP&S at the European or national level, more scientific work is needed to analyse their role and economic potential for the future of the forestry sector and rural development in general. A market survey of urban consumers'

demands could lead to a diversification in the structure of rural forest enterprises and a proactive market strategy to promote new products and services. This, however, appears to be lacking in the EU. Recently, an empirical consumer survey in selected cities of Switzerland became the first venture in procuring first-hand data at a national level (Kilchling et al., forthcoming). For the time being, however, it is not possible to go beyond the qualitative assessment of NTFP&S shown in these examples of cross-national surveys.

Concluding Comments

The intention of the authors to identify indicators for a European cross-country state-of-the-art assessment of NTFP&S on behalf of COST Action E30 was to achieve a sector overview with as much unity in the method applied for comparison as possible, in a vast field of diversity. Early in the study it became obvious to the authors that quantitative indicators, if available at all, would be difficult to compare in scope their economic relevance among very differently structured countries. An important aspect the authors came to realize was the strong local and regional differences in the availability and importance of NTFP&S within individual countries. The development of qualitative indicators was therefore aimed at. The two sets of qualitative indicators that were agreed upon in the sub-working group emerged predominantly from the experience of the working group members concerned, and proved helpful in that they placed the information available from the country reports in a nutshell instead of being dependent on extensive statistics with differing sources and methods of data aggregation.

The four examples of countries assessed in this way reveal trends, developments and differences as far as NTFP&S are concerned in a form of an introspective overview. The first set of indicators focuses on structural phenomena relevant to the country's forestry sector. The second set of indicators provides a more detailed overview with respect to particular NTFP&S. It allows for an assessment of the sector at a glance and could be expanded further by adding more indicators, if desired.

An appraisal of the present role and relevance of NTFP&S in society and economy and the future prospects of a wide range of European countries with a varying forest history and political legacy are essential to embark on a policy discourse about the development opportunities of NTFP.

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